W. B. ALDEN.

BALL AND SOCKET JOINTS FOR SCREW-JACKS.

No. 178,702. Patented June 13, 1876.

Fig. 1.

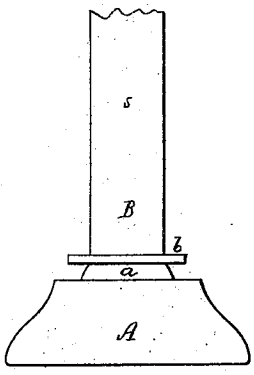
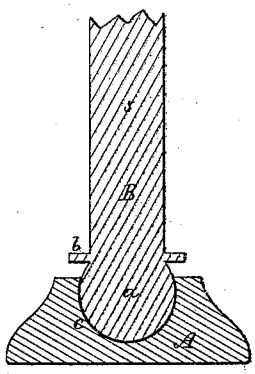


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM B. ALDEN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND CHARLES H. BAKER, OF SAME PLACE.

IMPROVEMENT IN BALL-AND-SOCKET JOINTS FOR SCREW-JACKS.

Specification forming part of Letters Patent No. **178,702**, dated June 13, 1876; application filed October 28, 1875.

To all whom it may concern:

Be it known that I, WILLIAM B. ALDEN, of Boston, of the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in the Manufacture of Ball-and-Socket Joints, or Feet or Supports, for Screw-Jacks, or various other articles; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a side view, and Fig. 2 a vertical and transverse section, of a ball-jointed shank and its socketed foot or supporter of my improved kind.

It is composed of two parts only—viz., the spherically-socketed base A and the spherically-balled shank B.

In carrying out my invention I cast or found of metal, and in a mold of which the socketed base A makes a part, the shank B, terminating in a segment, *a*, of a sphere larger than a hemisphere, as shown, and I usually provide the shank part *s*, at its junction with the segment *a*, with a shoulder or projecting flange, *b*, to extend from them in manner as represented, and to have a diameter greater than that of the mouth of the socket in the base A.

Instead of making the socketed base A in two separate parts, secured or otherwise fastened together, as has been customary heretofore, I construct it of a single piece or block, cast in a mold having a suitable core for the formation of the spherical socket *c*, for reception of the spherical segment *a*, such socket being a segment larger than a hemisphere of like radius, but less in circumference or arcal section than the ball-segment *a* of the shank.

The socket-base having been introduced, in a cool state, into the mold to form the shank, with or without the flange, the metal is to be poured into the mold, in which case the ball will be cast in the socket, and, in cooling, will so shrink as to be capable of being easily turned in the socket, especially after application of a little oil to their surfaces. The parts A and B thus become connected, each being in one entire piece, the part B being movable in various directions in the socket of the part A. Furthermore, the flange or shoulder *b*, besides serving as a support to a leg or object, into which the shank may be inserted, answers as a stop to determine the extent of lateral motion or sway of the ball in its socket, and it also answers as a means of protecting the ball from dust.

I do not claim, in a ball-and-socket joint, the socketed part made in two separate pieces, connected by screws or other means. Nor do I claim a ball provided with a neck or shank capable of being passed upward through the mouth of the socket without having to such neck or shank, at its junction with the ball, a projecting flange larger in diameter than the mouth of the socket. Nor do I claim a "shaft-coupling" composed not only of a hollow shell having ribs on its inner surface, but of a ribbed and socketed head cast loosely within such shell, such being as shown in the United States Patent No. 76,819, all of which differs materially from my invention, for I have no ribs to the ball or socket to prevent the former from being wholly revolved within the latter; and, besides, the spherical segmental recess of the socket of my invention constitutes a matrix, in part, for forming the spherical segment to turn in it, whereas such is not the case with the hollow shell shown in said patent. Furthermore, my spherical segment is not socketed to receive a shaft, but is cast in one piece with the shank B.

I claim—

The method described of making the shank B and the ball *a*, such consisting in casting them in one piece in and by means of a mold having the socket *c* of the base A a part thereof, and a matrix for the formation of the said ball.

WILLIAM B. ALDEN.

Witnesses:
R. H. EDDY,
J. R. SNOW.